sufficient to secure perfect immunity from external contamination, were found utterly ineffectual.

Thanks to the friendly action of the President of the Royal Society, I was enabled to escape from this atmosphere to a purer air. I had a series of tin chambers constructed, which were not permitted to enter the Royal Institution at all, but were taken straight from the tinman to Kew Gardens. They were mounted in the excellent laboratory recently erected there by the munificence of Mr. Jodrell. In this new position the insuperable difficulties encountered in London disappeared, and the experiments followed the course of those described in my last investigation. Two of the chambers gave way; but on being scrutinized they were found leaky. Five sound chambers, on the contrary, remained perfectly intact, and they embraced the particular substances which had given me so much trouble in London. Infusions exposed to the common air at Kew became rapidly rotten.

A fuller account of these researches shall soon be submitted to the Royal Society. In prosecuting them thus far I have been very ably assisted by Mr. Cottrell and his junior colleague Mr. Frank Valter.

January 25, 1877.

Dr. J. DALTON HOOKER, C.B., President, in the Chair.

The Presents received were laid on the table, and thanks ordered for them.

The following Papers were read:—

I. "Description of the Living and Extinct Races of Gigantic Land-Tortoises.—Parts III. and IV. The Races of the Aldabra Group and Mascarene Islands." (Conclusion.) By Dr. ALBERT GÜNTHER, F.R.S. Received November 30, 1876.

(Abstract.)

In continuation of, and concluding, the researches into the history of the Gigantic Land-Tortoises, read before the Royal Society on June 20, 1874, and published in the 165th volume of the Philosophical Transactions, the author treats in Parts III. and IV. of the Tortoises of the Aldabra Group and Mascarenes.

By the addition of the valuable materials obtained by one of the naturalists of the "Transit-of-Venus" Expedition to Rodriguez, and by the Hon. Edward Newton in Mauritius, as well as by the aid of supplementary information received from other sources, the author has been enabled to show in the present parts of his paper that the round-headed

division of Tortoises is confined to Aldabra and never extended to the Mascarenes proper, and that the Tortoises from the latter islands can be externally, though not osteologically, distinguished *as a whole* from the Galapagos Tortoises, as will be seen from the following synopsis:—

I. Nuchal plate absent. Frontal portion of the skull flat. Fourth cervical vertebra biconvex. Pelvis with broad symphysial bridge.

A. Gular plate double; sternum of moderate extent .... GALAPAGOS TORTOISES.

B. Gular plate single; sternum short ...... MASCARENE TORTOISES.

a. Carapace thin, thickened towards the margins; centre of the last vertebral plate raised into a hump, which is separated from the penultimate vertebral by a transverse depression: *Tortoises of Mauritius* (*T. triserrata*, *T. inepta*, *T. indica*, *T. leptocnemis*).

b. The entire carapace extremely thin and fragile, all the bones very slender: *Tortoise of Rodriguez* (*T. Vosmæri*).

II. Nuchal plate present. Frontal portion of the skull convex. Third cervical vertebra biconvex. Pelvis with narrow symphysial bridge. Gular plate double. Carapace thick. ALDABRA TORTOISES (*T. elephantina*, *T. Daudinii*, *T. ponderosa*, *T. hololissa*).

II. "On certain Definite Integrals." By W. H. L. RUSSELL, F.R.S. Received December 5, 1876.

The following paper is a continuation of one recently inserted in the 'Proceedings of the Royal Society.'

$$(13.)\ \int_0^{\frac{\pi}{2}} d\theta \log_\epsilon (1+2\alpha\cos^2\theta\cos 2\theta+\alpha^2\cos^4\theta)=\pi\log_\epsilon\frac{\alpha+4}{4}.$$

$$(14.)\ \int^{\infty} \frac{d\theta\sqrt{1+\alpha\cos\theta+\sqrt{1+2\alpha\cos\theta+\alpha^2}}}{1+\theta^2}=\frac{\pi}{\sqrt{2}}\cdot\frac{\sqrt{\epsilon-\alpha}}{\sqrt{\epsilon}}.$$

Similarly we may find

$$(15.)\ \int_0^{\infty} d\theta\sqrt{\cos 2\theta+\mu\cos 3\theta+\sqrt{1+2\mu\cos\theta+\mu}}\log_\epsilon\frac{\theta^2+\mathfrak{C}^2}{\theta^2+\alpha^2}.$$

$$(16.)\ \int_0^{\frac{\pi}{2}} \frac{\log_\epsilon\cos\theta\cos 2\theta}{1-2x^2\cos 4\theta+x^4}=\frac{\pi}{8x(1-x^2)}\log_\epsilon\frac{1+x}{1-x}.$$

$$(17.)\ \int_0^{\pi} \theta d\theta\cdot\frac{\sin\theta+x^2\sin 3\theta}{1-2x^2\cos 4\theta+x^4}=\frac{\pi}{\sqrt{x}}\left\{\log_\epsilon\left(\frac{1+\sqrt{x}}{1-\sqrt{x}}\right)^{\frac{1}{4}}+\frac{1}{2}\tan^{-1}\sqrt{x}\right\}.$$